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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/050,621	01/15/2002	Yu-Chiang Cheng	8688.258US01	6455
23552	7590	07/16/2004	EXAMINER	
MERCHANT & GOULD PC P.O. BOX 2903 MINNEAPOLIS, MN 55402-0903			TRINH, MINH N	
			ART UNIT	PAPER NUMBER
			3729	

DATE MAILED: 07/16/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/050,621

Applicant(s)

CHENG ET AL.

Examiner

Minh Trinh

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 January 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-5 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over McKenzie, Jr (US 5,140,745) in view of Minoru (5,309,326).

McKenzie, Jr discloses a method of fabricating a multi-layer assembly, comprising: providing a first multi-layer circuit board module 102 which has opposing first upper and lower surfaces, and a first lateral edge joining said first upper and lower surfaces, said first upper surface being formed with a plurality of first module interconnect circuit traces that are led toward said first lateral edge (see Fig. 10, which depicts the above configurations); providing a second multi-layer circuit board module 104 which has opposing second upper and lower surfaces, and a second lateral edge joining said second upper and lower surfaces, said second upper surface being formed with at least one of second module interconnect circuit trace that are led toward said second lateral edge (see Fig. 10, shows the above configurations). stacking said second multi-layer circuit board module 104 on top of said first multi-layer circuit board module 102 such that said second lower surface is superimposed on said first upper surface and such that said second solder pads are registered with said first solder pads, respectively (see Fig. 10). Note that McKenzie, Jr inherently discloses the method

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steps of: forming a plurality of first solder pads on said first lateral edge of said first multi-layer circuit board module such that each of said first solder pads is connected electrically to a respective one of said first module interconnect circuit traces (see Fig. 1); and forming a plurality of second solder pads on said second lateral edge of said second multi-layer circuit board module such that each of said second solder pads is connected electrically to a respective one of said second module interconnect circuit traces (see Fig. 1). McKenzie, Jr does not teach a step of bonding each of said second solder pads to the registered one of said first solder pads so as to interconnect said first and second module interconnect circuit traces. Minoru teaches the of bonding each of said second solder pads to the registered one of said first solder pads so as to interconnect said first and second module interconnect circuit traces (see Fig. 1).

Therefore, it would have been obvious to one ordinary having skill in the art at the time the invention was made to employ the Minoru's teaching as discussed above onto the method invention of McKenzie, Jr in order to form a desired interconnecting modules. The motivation for this combination can be found at col. 2, lines 60-62 of Minoru reference. Note that Fig. 10 of McKenzie , Jr. shows a multiplayer PCB 102 and 104.

Regarding claims 2-3, noting McKenzie, Jr inherently discloses the limitation of claims 2-3 (see Fig. 1).

Regarding claim 4, noting McKenzie discloses the limitation of claim 4 (see Fig. 3B).

Regarding claim 5, it would have been an obvious matter of design choice to choose any desired bonding techniques to bond the first and second pads together since

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applicant has not disclosed wherein the bonding of the first and second pads by electroplating is critical, patentably distinguishing feature and it appears that the invention would perform equally well with the interconnecting as shown by Minoru's Figs. 2.

Prior Art References

3. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Prior art references are cited for their teaching of method of manufacturing multilayer PCB or the like.

Conclusion

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Minh Trinh whose telephone number is (703) 305-2887. The examiner can normally be reached on Monday -Thursday 8:00 am to 4:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Peter Vo can be reached on (703) 308-1789. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Minh Trinh 7/12/04
Patent Examiner Group 3729

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